

A Satellite-Based Mobile Warning System to Reduce Atlantic Sturgeon Interactions in Delaware waters

Grant No. NNX17AG34G

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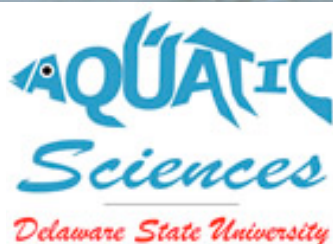
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Ed Hale, DNREC



NOAA FISHERIES
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

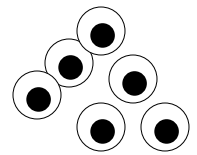
Marine

Estuary

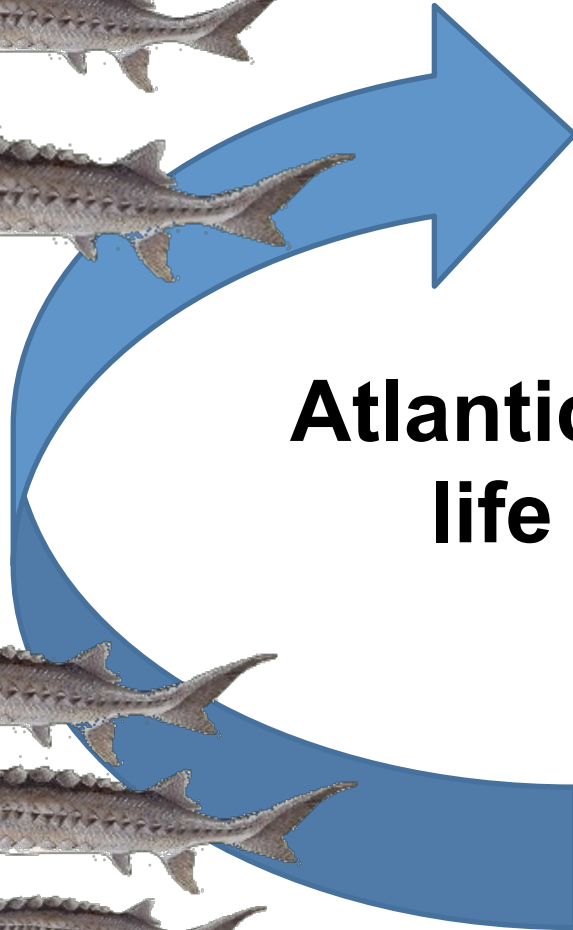
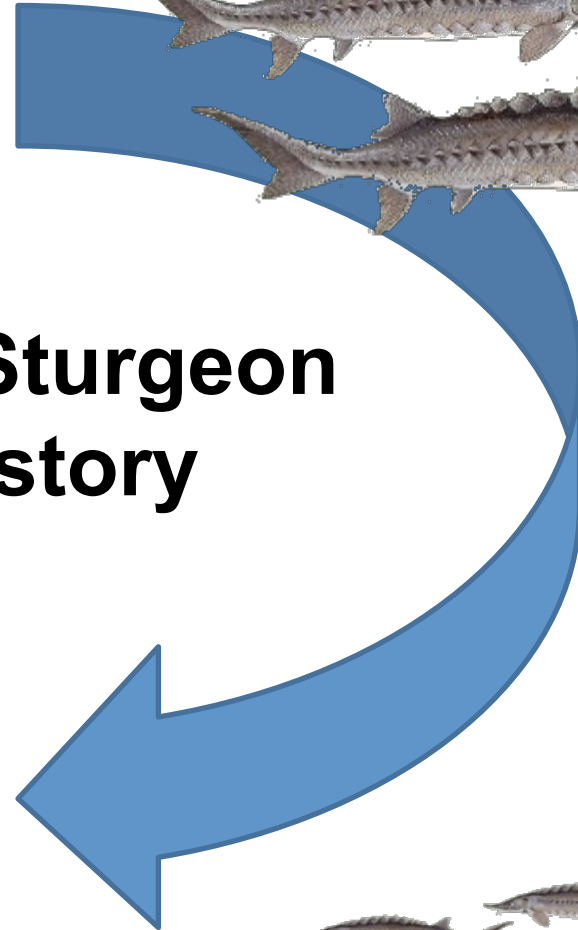
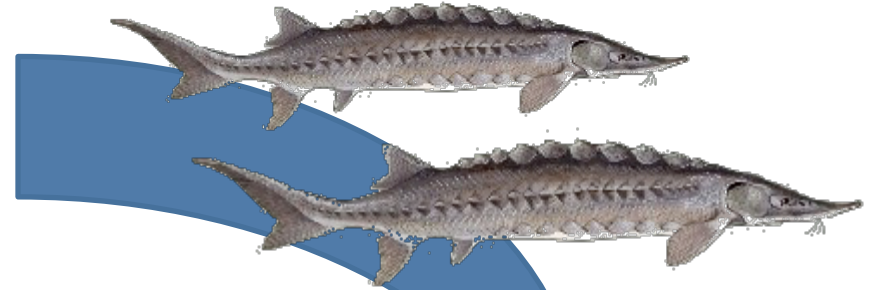
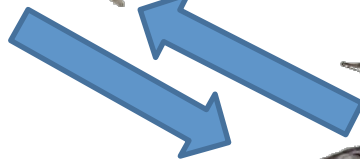
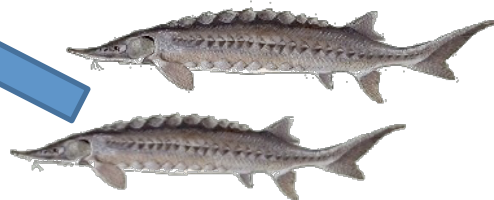
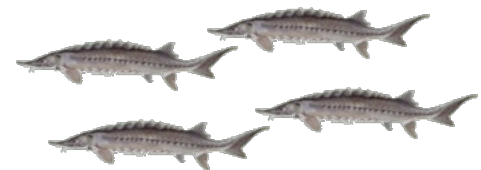
Fresh

**Atlantic Sturgeon
life history**

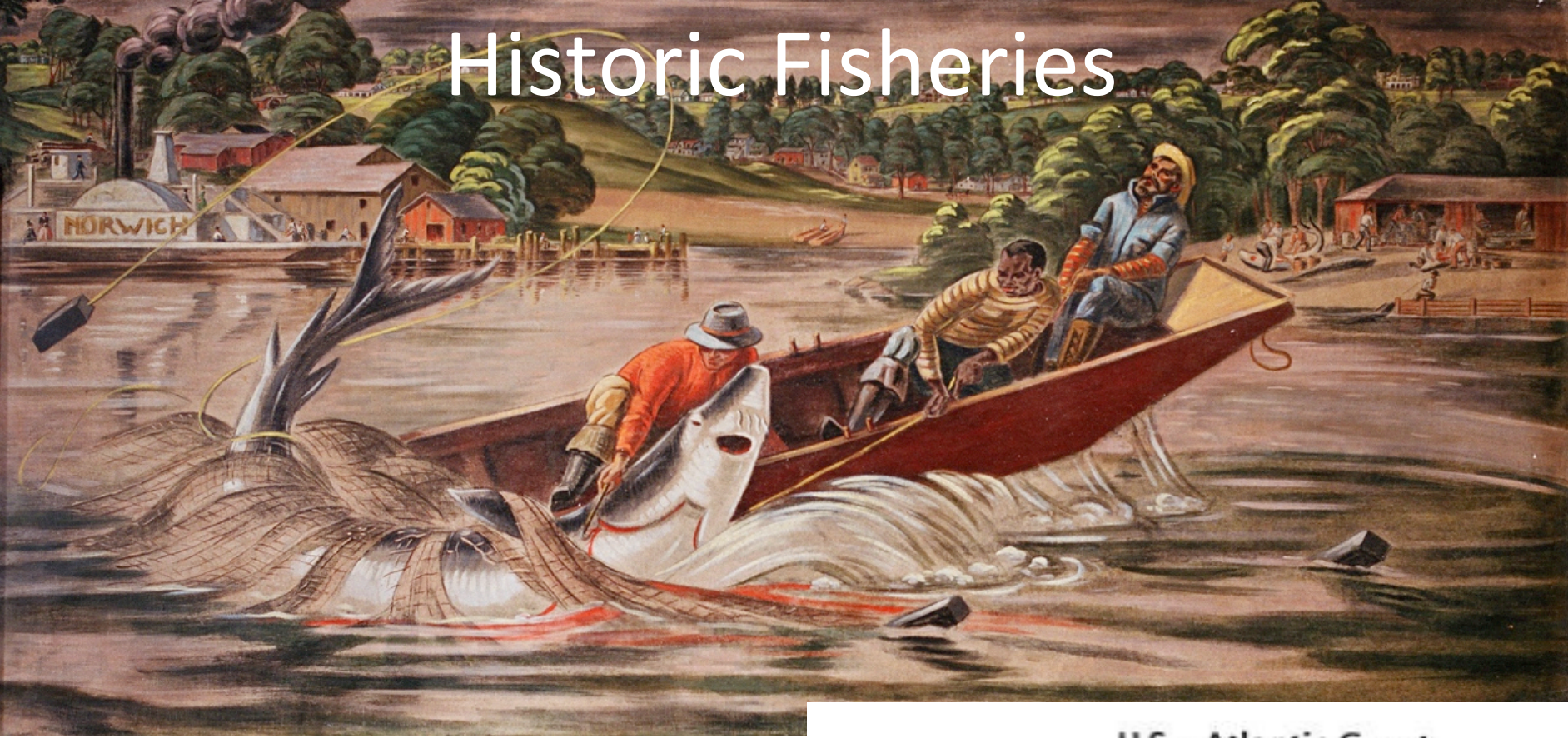
Spawning



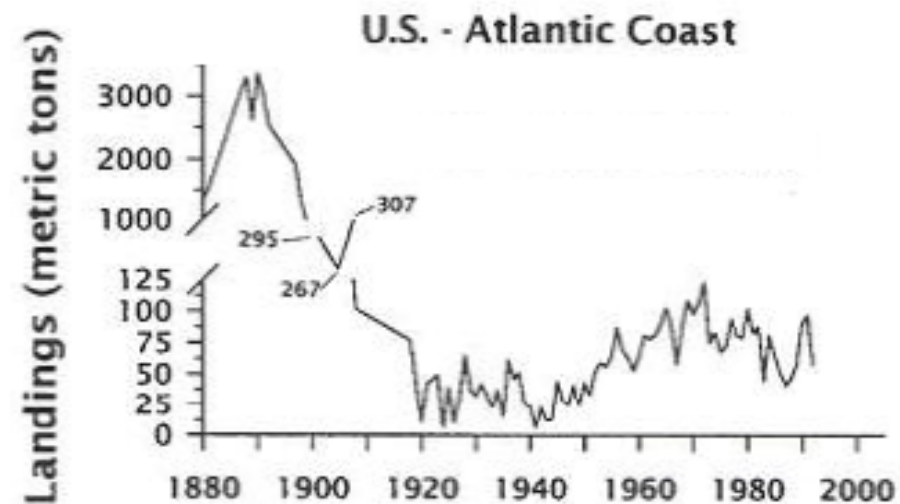
Development



Historic Fisheries

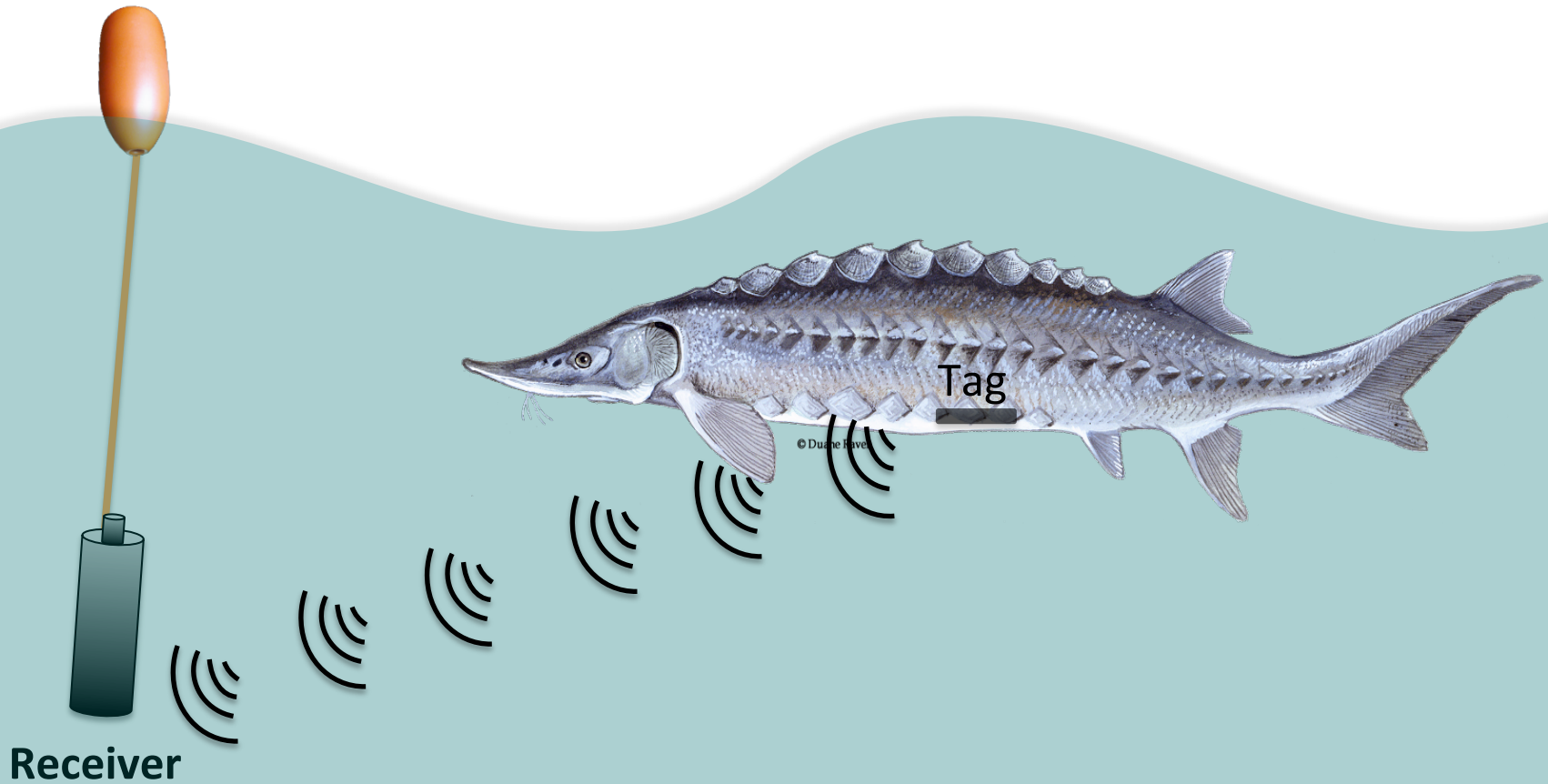


- Delaware River Fishery
 - Peak of 2700mt harvest 1888
 - Largest sturgeon fishery in the United States (75% of landings)
 - Collapsed ~1900
- Minimal take, no recovery
 - Coast wide moratorium since 1998
 - Listed under the ESA in 2012



Acoustic Telemetry

Must download
Receivers



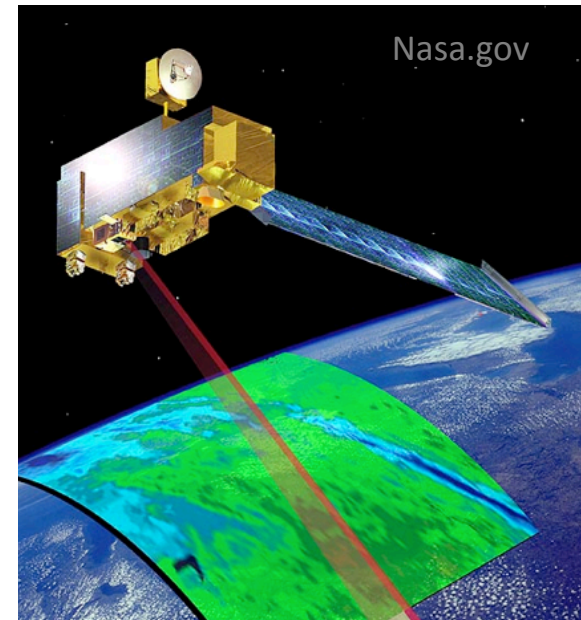
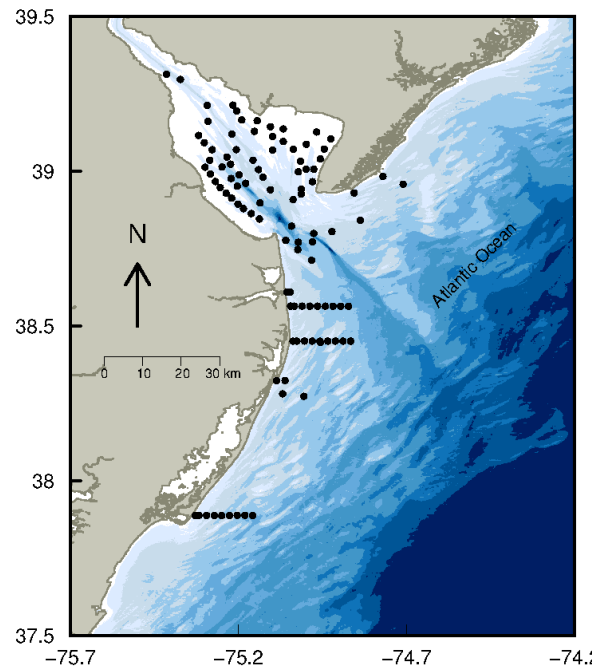
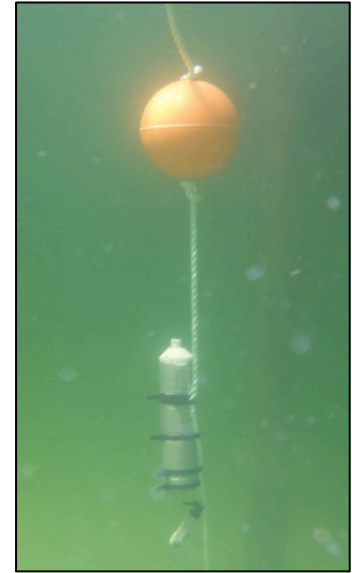
Model Formulation

Response – Presence/Absence

- Atlantic Sturgeon
 - 301 individuals
 - 1,900 presences matched to 1 day Satellite data
 - 1,387,197 absences matched to 1 day Satellite data

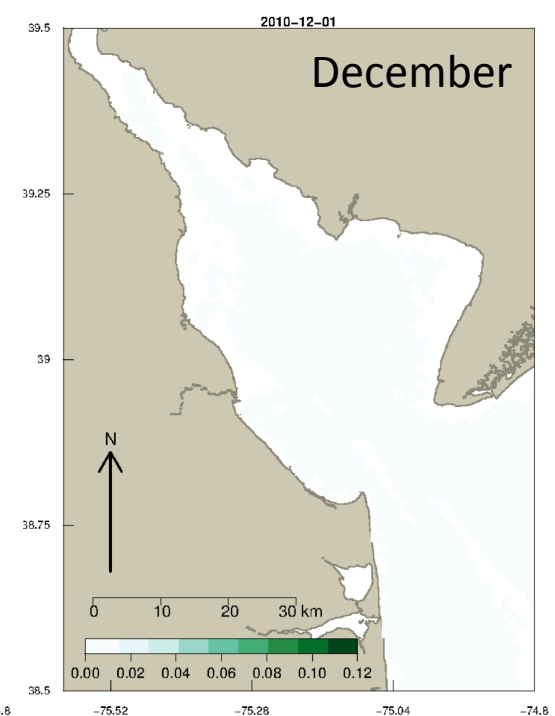
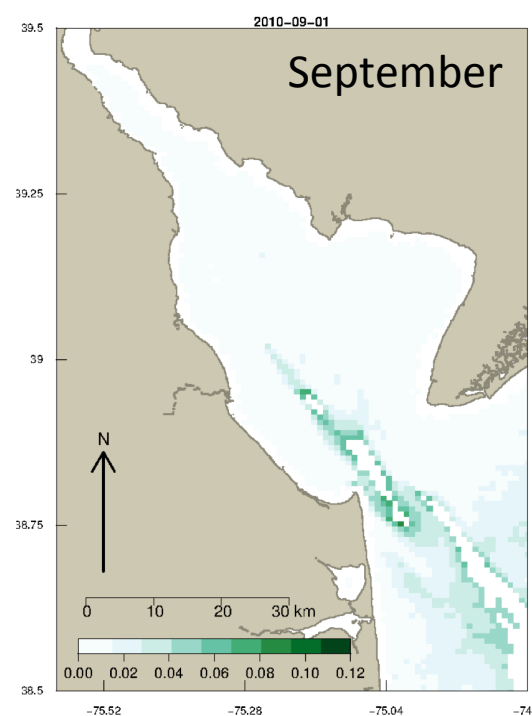
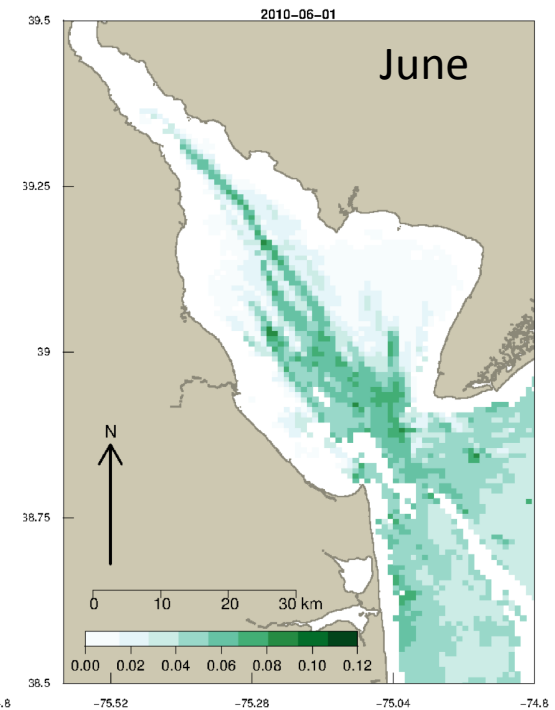
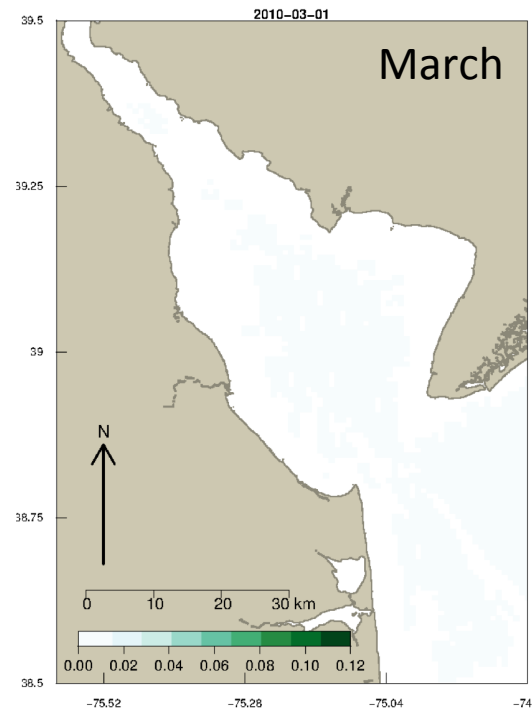
Predictors

- One-Day MODIS Aqua
 - SST
 - Absorption
 - (12 wavelengths)
 - Seascapes
 - Day of year
- Bathymetry
- Variable reduction
 - Information valuation
 - Collinearity test
 - Future relevance

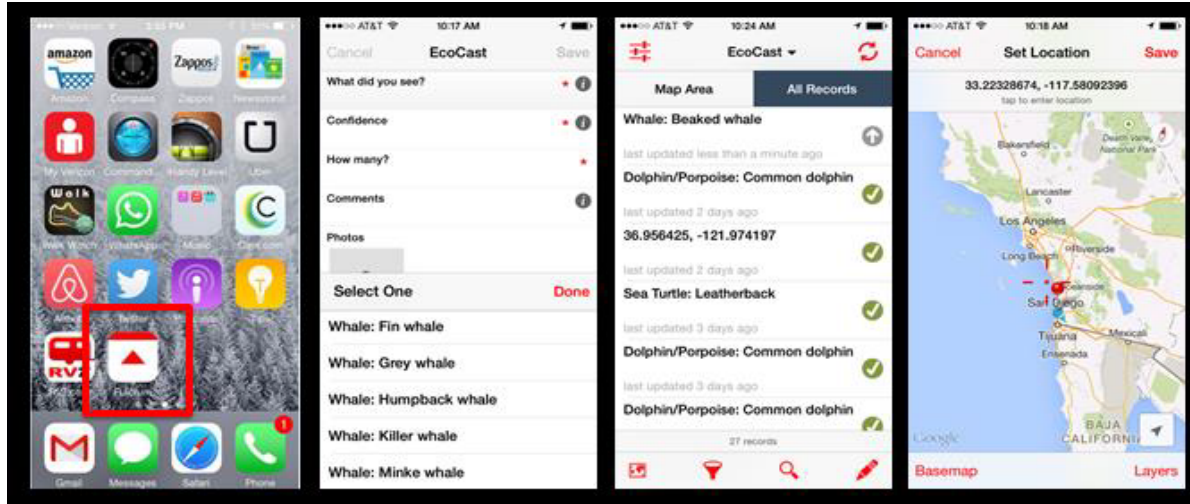


Atlantic Sturgeon Predictions

- Relative Probability of Occurrence
 - 4 predictors
 - Depth
 - Day of Year
 - Temperature
 - Absorption at 443nm
 - Interaction between Depth and Day of Year
- April 1st – October 30th
 - **91% correct for Fisheries Observer Data**



Product Delivery



— EcoCast and Blackboard Texts

